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The Path of Building Curriculum Resources of Adult Colleges and Universities Based on MOOC in the Intelligent Era

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Abstract

Curriculum resources are the basis for ensuring the implementation of the curriculum, their suitability and richness affect the achievement of the curriculum teaching goals. They are an important guarantee for achieving the curriculum teaching goals. The application of artificial intelligence technology in the field of education has triggered profound changes in teaching and learning. In the intelligent era, how to build a massive adult education learning resource library that can meet personalized needs has become an important topic and development direction of learning resource construction. The construction of adult colleges and universities curriculum resources based on MOOC is an effective means of promotion for teaching and learning. This paper analyzes the defects in the construction of traditional curriculum digital learning resources in adult colleges and universities, the advantages of the construction of curriculum resources based on MOOC in adult colleges and universities, the principles and paths of the construction of curriculum resources based on MOOC, in order to quickly create the exclusive curriculum resources suitable for adult colleges and universities and in line with the characteristics of adults, make better use of its supplementary teaching and supplementary learning, effectively improve the quantity and quality of adult education resources construction, and promote the development of adult education and teaching.

Key words: MOOC; Adult colleges and universities; Curriculum resources

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Since the middle of the 18th century, there have been three industrial revolutions in human history. The first industrial revolution was initiated by Watt in the "steam era", the second industrial revolution entered the "electrical age", and the third industrial revolution entered the "information age". Every industrial revolution is accompanied by the emergence of new technologies and industries. Since 2010, the fourth industrial revolution has been born on the basis of the third industrial revolution, which is marked by the rise of artificial intelligence, robotics, nanotechnology, quantum computing, biotechnology, the Internet of things, blockchain and 3D printing and other technologies, so as to promote human society into an intelligent era. The application of artificial intelligence technology in the field of education has led to profound changes in teaching and learning. Curriculum is the main carrier of teaching and learning and is the key element to ensure the quality of teaching. Curriculum resources are the basis to ensure the implementation of the curriculum, its suitability and richness affect the achievement of the curriculum teaching goals, and are important guarantee for achieving the curriculum teaching goals.

As of June 15, 2019, there are 268 Chinese Adult Colleges and universities with 5.9099 million students. Adult education is an important part of the construction of China's lifelong education system and the formation of a learning society of all people and lifelong learning. Therefore, how to correctly analyze the characteristics of adult students, and how to teach students in accordance with their aptitude and needs is the top priority of adult

education. The Internet makes the long tail effect of learning a reality (Anderson, 2006). As shown in Figure 1, informal learning in adults' daily life and after work is at the end of the long tail, and learners' needs are more and more diversified and personalized. Although the demand of each person is not very large, the accumulated amount of all people is very large. The pre-set expert production method cannot meet the small, personalized but numerous resource needs. In the era of intelligence, how to build a massive adult education learning resource library that can meet the personalized needs has become an important topic and development direction of learning resource construction. The construction of curriculum resources based on MOOC in Adult Colleges can be regarded as an effective resource construction means to promote teaching and learning.

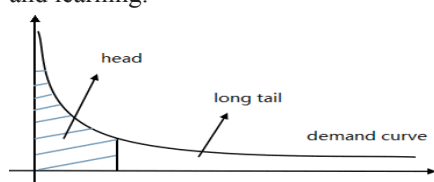


Figure 1
"Long tail theory" model

1. DEFECTS IN THE CONSTRUCTION OF DIGITAL LEARNING RESOURCES FOR TRADITIONAL COURSES IN ADULT COLLEGES

Curriculum teaching resources are all kinds of materials and conditions that can be used for the effective development of curriculum teaching, usually including teaching materials, cases, film and television programs, teaching facilities, etc., and also broadly including contents such as educational policies. Due to the uneven distribution of high-quality teaching resources in China's education caused by the differences in regional economic and industry layouts, coupled with the impact of funding constraints and the large student base of many universities, high-quality teaching resources are seriously inadequate. In particular, in terms of meeting different teaching needs and different learning needs, the lack of high-quality teaching resources is particularly prominent in the many problems facing the development of colleges and universities. The China's Ministry of Education's "Ten-year Educational Informatization Development Plan (2011-2020)" pointed out that there is a significant gap in the informatization of education between the educational needs of the people and that of the developed countries in the world, and high-quality educational resources are particularly lacking. The serious shortage of high-quality educational resources has become the main contradiction in China's current education field, and it has triggered a series of hot and difficult issues that are of great concern

to society, such as training quality, education equity, student employment, and self-sponsored education.

Although the traditional curriculum learning resources of adult colleges and universities have various forms and massive data, it is difficult to seamlessly support the deep interaction, open teaching activities and ubiquitous and open learning activities in the intelligent era, which is not conducive to the effective development of learning. The defects of traditional digital learning resources construction in adult colleges and universities are as follows: a) The learning video is too long to support fragmented learning, the video production is lack of beauty and movement, the teachers' teaching expression is rigid, and the teaching situation is lack of perception; b) The learning video is difficult to be self-adaptive presented on a variety of terminal devices, and it cannot perfectly support the mobile learning with seamless connection of multiple terminals; c) Digital learning resources are mostly limited and shared by regional adult colleges and universities, lack of extensive communication and sharing, and lack of in-depth integration under the consideration of systematic knowledge system; d) Lack of normative copyright restrictions on the replication and use of learning resources, resulting in Teachers' fear of investing in the production of high-quality resources and sharing resources; e) Learning resources are produced according to the cultural foundation and learning characteristics of ordinary higher education students, which does not fit The basic and cognitive characteristics of adult college and university students.

How to develop and expand high-quality education and teaching resources, improve the quality of education and teaching, how to rationally allocate limited high-quality education and teaching resources to promote education equity, are important issues in current education. The effective development of adult education needs a large number of high-quality resources and effective learning data support. Therefore, the development of adult education should change the current situation of traditional digital resources, innovate the construction and use of resources, realize the upgrading and transformation of resources, meet the needs of the transformation of teaching and learning methods, and serve the cultivation of learners' creativity.

2. THE ADVANTAGES OF BUILDING ADULT COLLEGE CURRICULUM RESOURCES BASED ON MOOC

MOOC (Massive Open Online Course, Chinese translation also known as "Mu Courses") are online courses based on modern information technology, which are characterized by large scale, openness, self-organization and sociality. It appears under the background of the idea of lifelong education being recognized by the society, the successful application of Internet technology in education and the trend of socialized learning, which is conducive to the

construction of socialized learning network and the creation and sharing of knowledge. The characteristics of MOOC, such as large-scale, interactive, free and open, have truly realized “education for all without discrimination”, expanded the target of education; locking the educators in the world’s famous schools and teachers. MOOC improves the quality of education, and disseminates high-quality curriculum resources to global every corner. It promotes the sharing of knowledge, expands the learning place from the traditional classroom to the online network that you can learn anytime, anywhere. It breaks the geographical limitation of learning, changes the teaching mode from the teacher dominated classroom to the students’ independent learning, and realizes the equal dialogue between teachers and students.

The construction of adult college curriculum resources based on MOOC has the following advantages: a) MOOC’s features including autonomy, diversity, openness, relevance, and interaction allows teachers and learners distributed everywhere to connect through a common topic or theme, and make the traditional adult college curriculum “digital” and “networked”, which is conducive to the characteristics of learners and gives full play to the flexibility of education space and time; b) With the help of powerful Internet and information technology, MOOC platform’s high-quality lecture video, embedded course online testing and evaluation, online communication and interaction between teachers and students are conducive to teaching interaction and the realization of teaching benefiting teachers as well as students; c) MOOC’s concept of “education for all without discrimination” and advanced technical support can satisfy many students who failed in the college entrance examination or failed to have the opportunity to receive higher education. The public’s craving and longing for universities has opened the door for learners to achieve “education equity”; d) From the perspective of social progress, the popularization trend of higher education has made higher education institutions unable to settle in the ivory tower and only provide high-quality education for some “elites”. The application of MOOC in the construction of curriculum resources in adult colleges and universities will greatly benefit the dissemination and sharing of knowledge, so that high-quality adult education resources can be explored and utilized to the maximum extent, and promote the international flow and sharing of education resources.

3. THE PRINCIPLE OF BUILDING ADULT COLLEGE AND UNIVERSITY CURRICULUM RESOURCES BASED ON MOOC

3.1 Demand First, Overall Planning

The construction of learning resources should be adapted to the actual needs of social and economic development.

According to the cognitive characteristics of students and the teaching needs of schools, the construction of learning resources should be planned as a whole to ensure the balance, phase and coordination of the construction of learning resources, and to maintain a sustained and stable growth of the total resources. In the era of ubiquitous education and all-media intelligence, the media utilization of learning resources is also undergoing significant changes. It is necessary to suit different terminals, such as smart phones, iPads and other mobile devices, to meet the segmentation needs of learners.

3.2 Standardize the Construction of Learning Resources

It’s necessary to promote the standardization of learning resources construction according to the relevant international, national and industrial standards. We should carry out the distributed storage management of resource index directory, carry out the semantic association collection and cloud storage of resource data, so as to ensure the universality and effectiveness of learning resources, realize the dynamic management of resources and their application, and improve the utilization efficiency of resources in the network environment. The new learning resources should be coordinated and complementary with the original resources, which can be applied to both academic education and nonacademic education, and strive to be innovative in concept, scientific in content, advanced in technology and standardized in production.

3.3 Technology and Learner Centered

The construction of learning resources is driven by projects, fully exerting the advantages of modern educational information technology, selecting appropriate means and media, changing the previous orientation of “technology centered” resource construction, turning to the construction concepts of “on-demand construction”, “people-oriented”, “learner centered”, paying more attention to the experience of learners. We should accelerate the penetration of information technology and the application of new scientific and technological achievements, deeply integrate various media forms, build a series of adult college and university curriculum learning resources relying on the project, and meet the personalized learning needs of adult learners.

3.4 Integrated Multiple Media

In the era of intelligence, according to the characteristics of different media, it is necessary to plan and manage the integration of resource content and communication channels. Based on MOOC, we will carry out integrated curriculum resource design based on digital textbook, IP courseware, CAI courseware, network course, case base, mobile phone resources, WeChat resources, micro blog resources and other media resources, fully consider the integration form among media types, form rich

media types, appropriate communication methods and outstanding integration effects, and truly achieve the “integration” of resources

4. THE PATH OF BUILDING ADULT COLLEGE CURRICULUM RESOURCES BASED ON MOOC

4.1 Building a MOOC Resource Construction Team

The teaching staff is a key factor in the construction of curriculum resources in adult colleges and universities. Adult colleges and universities should select and encourage teachers with high academic attainments and high levels of teaching who master modern information technology to be the person in charge of curriculum resource construction, and build a curriculum resource construction team that includes teaching, counseling, design, and service, etc.. Peking University provides a teaching assistant team for the keynote teachers of the first online MOOC; the teaching team of “Introduction to Philosophy” of Shanghai University Curriculum Sharing Center is composed of the keynote teachers and seven teachers from different universities in Shanghai. Adult colleges and universities build curriculum resources based on MOOCs, and they also need to form corresponding resource construction teams. This is an important guarantee for improving the quality of adult education, and it is also a basic work to promote adult college teaching.

Different teaching designs require different teaching resources to achieve effective teaching. The teaching design of the curriculum resources of adult colleges and universities are different from the teaching design of traditional courses. It has the characteristics of adultization, application-oriented and strong information technology. At present, adult colleges and universities are desperately short of professional and experienced network course teaching designers, so we should strengthen the training of adult college and university course resource teaching designers, so as to promote greater specialization and development. At the same time, it is necessary to strengthen the training of the lecturers, so as to help them master the teaching concept of MOOC, the mode and method of combining online and offline teaching, and help them change from traditional teaching concept to modern teaching concept, and ensure the construction quality of curriculum resources in adult colleges and universities.

4.2 Emphasis on the Adult Characteristics of Curriculum Resource Construction

Knowles (M. S. Knowls) proposed the concept of “Andragogy” and theorized it, which had a great influence in the field of adult education. He pointed out in the “Practice of Modern Adult Education” published in

1980 that there are four main aspects of adult learning characteristics: First, once adults find that they can take the responsibility of learning, they will devote themselves wholeheartedly to learning. Second, they have accumulated a lot of experience, which has become their rich learning resources. Third, what they plan to learn is closely linked to their social responsibilities. Fourth, adult learning is centered on problems and applied to practice (Shuai, 2012).

In terms of teaching content, to build learning resources suitable for the needs of adult development, we must pay attention to the practicability and expansibility of resources according to the characteristics of adult learning, meet the personalized and multi-objective learning needs, and its content should return to adult real life, meet the needs of adult work and career development in the future. From the perspective of teaching design, it should conform to the laws of synthetic human education and the training objectives of application-oriented talents, and proceed from the actual condition that adults are of less learning time and fragmented learning time. Therefore, in the construction of MOOC-based adult college and university teaching resources, the design and production of video resources should be short and refined. Generally speaking, the video duration should be controlled under 10 minutes, and the knowledge points involved in a single course should be less or more, the integrity and continuity of the knowledge structure between courses should be paid attention to, and the logic should be emphasized. The curriculum resources of different subjects in adult colleges and universities should present distinguished features to avoid the sameness. For example, “Economic Mathematics Basics” is a basic course for adult colleges, the focus of curriculum resource construction should mainly reflect the application of various mathematical formulas, and the origin and development of various mathematical theorems doesn’t have to be detailedly introduced and promoted as arranged at the level of ordinary undergraduate or graduate students..

4.3 Building Resources Based on Flipped Teaching and Intelligent Push

The features of adult education determine the relevance of the combination of online and offline flip teaching. Instructors design teaching based on flipped classrooms, set clear themes and progress requirements for learners’ pre-class online learning, help learners formulate learning plans suitable for individuals, and help learners solve problems in a timely manner; As for learner’s offline learning, instructors organize in-class discussions based on pre-class MOOC video learning and a variety of teaching methods may involve students in active participation. This mixed online and offline teaching model is a practical and feasible teaching model reform under the sharing of high-quality domestic higher education resources in China. The combination of online education and offline education

has realized the integration of physical resources and virtual resources, the integration of internal and external resources, and created a broader space for development and learning.

In flip teaching, the construction of MOOC-based curriculum resources must be able to stimulate learners' interest in learning. Some enlightening questions or interactive links can be embedded in the online course resources, and the length of online learning can be recorded. In the flipped classroom teaching situation, we should pay special attention to the course resources and control the duration of the course video. In addition, because the face-to-face sessions of adult flipping classrooms cannot be as many as those in primary and secondary schools, under normal circumstances, the number of flips of a course in a semester can be set to 3 to 5 times, which are before the start of the course learning, during the course learning and before the end of course learning examination. Due to the small number of flips, the online interaction between teachers and students is particularly important. There must be more links in the video resources to support online interactive learning. There must be online self-tests and answers for students to learn independently. There must be targeted analysis and explanation of key and difficult points.

In the intelligent era, students' online learning has formed a huge "learning big data". Through data analysis, we can effectively analyze and reveal the hidden learning laws. Through data mining, we can analyze and match various forms and semantic related resources that meet the needs of users, and then we can push personalized resources that meet the current or potential needs of users through the intelligent push platform. The methods of recommendation, subscription, sharing, attention and rapid retrieval can accurately and rapidly achieve resource acquisition and sharing among groups with similar personal needs (Cheng, et al, 2019). In this way, teachers can carry out personalized teaching in a targeted manner. The platform pushes course resources based on learning data and provides personalized teaching services. Based on this, the curriculum resources need to be able to be built to meet the learning needs of different levels and solve different problems. The newly constructed curriculum resource library must meet the personalized retrieval and push characteristics of resources, and can be intelligently based on the individual needs of each student and customized. The "Guide to the Construction of Teaching Resources for Professional Education" issued by the Vocational Education Department of the China's Ministry of Education puts forward the top-level design of "fragmented resources, structured courses, and systematic design" in the construction of resource libraries (Wang, 2017), which is also applicable to the construction of curriculum resources in adult colleges. The construction of the platform has important guiding significance. The granularity of resource fragmentation takes knowledge

points as the basic unit, and each knowledge point is composed of relevant contents such as teaching micro video, electronic lesson plan, teaching text, demonstration animation, simulation operation, homework exercises and so on. On the basis of knowledge points, chapters can be generated by summarization, and chapters can be combined to generate courses.

4.4 Strengthen the Optimization, Integration and Sharing of Resource Construction

At present, there are some problems in adult college curriculum resource construction, such as simply copying ordinary college and university curriculum resources, crude teaching design, poor usability and poor sharing. In recent years, China has successively launched projects such as the "National Vocational Education Resource Database Construction", "Excellent Curriculum Construction", and "Network Education Digital Learning Resource Center Construction". Adult colleges and universities have numerous curriculum resources, but limited implementation of shared applications. Schools have their own policies, and most resource platforms restrict the scope of login. Students across the school or regions, or ordinary social users cannot use them, and there is no resource sharing, resulting in repeated construction of teaching resources among different schools. At the same time, because part of the resource construction did not strictly abide by the modern distance education technology standards and related specifications issued by the China's Ministry of Education, the extensive sharing and optimization of the curriculum resources and failed to adopt a standardized method, are severely restricted.

In the open learning era, the resource construction mode of "single fight" cannot meet the needs of adult learners for "massive", "optional", "personalized" resources. For a long time, the concept of co-construction and sharing of learning resources has been difficult to be effectively implemented. The reason is that "the overall level of educational informatization is not high, which is the bottleneck of the difficulty of resource opening. The closed educational system leads to the lack of motivation for the opening and sharing of resources, and the lack of market mechanism leads to the difficulty in forming the scale of the opening and sharing of resources.". Only by innovating system and mechanism can we get out of the (Guo, 2016)bottleneck. As early as 2012, Professor Chen Lin proposed the "public construction and public enjoyment" construction model in which the government is the main body of investment and all people enjoy resources, and fundamentally realize the right of everyone to enjoy high-quality resources (Chen, et al, 2012). However, this model requires huge financial and material resources. From the perspective of education expenditure, it cannot afford to pay for it, there is still a certain gap. And enterprises not only

have a large number of resource construction talents, advanced construction concepts and management and operation models, but also their commercial capital can promote the structural reorganization and optimization of resources. Therefore, in terms of operation mode, with the support of government funds and policies, it is possible to gradually implement a semi-public welfare and semi-market operation mechanism of “mainly co-construction and sharing, supplemented by commercial construction and public construction and public enjoyment”. And learn from the Internet business model and rely on the cloud service platform to establish a scientific, orderly and efficient resource operation mechanism.

In summary, in view of the current situation of curriculum resource construction in the current adult education development process, the following strategies and measures should be adopted in the MOOC-based resource construction process: a) The design and development of adult college and university curriculum resources should be carried out in strict accordance with relevant national industry standards to improve the sharing of adult education resources. B) To better achieve the sharing of teaching resources based on informatization methods, it is necessary to establish a shared knowledge platform under the constraints of sharing norms, integrate the state, industry enterprises, universities, and social forces to build a national and regional high-quality adult education resource sharing platform and quality course resource library. C) Formulate corresponding laws and regulations, establish a practical and feasible resource sharing mechanism, guarantee the corresponding benefits and rights of resource builders, and promote the sustainable development of resource construction.

4.5 Establish an Effective Incentive and Evaluation Mechanism for Resource Construction

Adult colleges and universities should take practical measures to encourage teachers, teaching managers and other relevant personnel to actively participate in the construction of MOOC based curriculum resources, and include teachers' ability to master modern education technology into the assessment requirements, establish relevant incentive and evaluation mechanisms, give corresponding rewards to participants in MOOC resource construction, and stimulate teachers to learn modern education technology and participate in MOOC Teaching enthusiasm. At the same time, establish and improve the evaluation system of adult college curriculum resources, establish the access and elimination mechanism of resources, and promote the quality of curriculum resources construction. Through the combination of expert evaluation, learner evaluation, teacher self-evaluation, supervision and supervision evaluation, the curriculum resources of adult colleges and universities are strictly reviewed and effectively evaluated to fundamentally ensure the scientificity and standardization of resource

construction, constantly improve the quality and level of resource construction, and lay the foundation for the effective integration and sharing of resources.

In the process of resource integration, it is necessary to clarify the responsibilities and obligations of all parties, take the interest driven as the guide, adopt the form of the combination of virtual currency system and integral system of resources, form an efficient resource trading mechanism, effectively regulate users' behaviors in resource construction, fully guarantee the rights and enthusiasm of resource builders, and promote users to build more high-quality resources, thus forming The positive circulation trend of resource construction and application with the combination of rights and obligations and sound development. The shared knowledge platform can record the learning traces such as the time of using shared resources, the mouse track of operating simulation software, the completion of assignments and the results of participating in stage tests, so as to provide the corresponding learning achievement evaluation at the end of the course. It can promote the learning evaluation provided by the sharing knowledge platform which integrates the high-quality curriculum resources of adult colleges and universities to be recognized within a certain range, so that it can become the proof of the credits, class hours and scores of students' cross major elective, or cross school learning, so as to mobilize the enthusiasm and enthusiasm of students and social members to participate in the learning of the sharing platform curriculum resources.

CONCLUSION

In the era of intelligence, the curriculum has been expanded and updated comprehensively due to the support of massive resources, and fundamental changes have taken place from the knowledge structure to the basic content. The knowledge structure of the curriculum is of both systematization and flexibility, and its artistry and living are becoming reality, and the development of school-based curriculum is no longer difficult. Personalized and customized fragmentary knowledge demand is becoming a growing practical demand. Based on MOOC, the construction of high-quality curriculum resources in adult colleges and universities can quickly obtain a large number of shared resources through inheritance, reference and other ways on a unified shared knowledge platform. Reorganization operations such as addition, deletion, and modification need to be combined with their own course requirements to quickly form polymorphic course resources of the same type of course. The application of this method not only retains the essence of the original course resources, but also achieves the sharing of essence. Each one takes what he needs from the original curriculum resources, and achieves the essence sharing. At

the same time, this method also gives resources creators great freedom, which helps to learn from each other's needs and create their own resources that are suitable for their own school, their own major and their own course. We should give full play to its supplementary teaching and supplementary education, improve the quantity and quality of adult education resources, promote the development of adult education and teaching.

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